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PLEXIGLAS



ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PENNA.



PLEXIGLAS

CRYSTAL-CLEAR PLASTIC

SEVENTH EDITION



ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PENNA.

A C R Y L I C R E S I N S

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Acrylic resins are manufactured and marketed by the
Rohm & Haas Co. under the following trade names:

PLEXIGLAS
Sheets, Rods and
Molding Powders

PLEXIGUM
Safety Glass Film

ACRYLOID
Solutions

ACRYSOL
Emulsions

PRIMAL
Leather Finishes

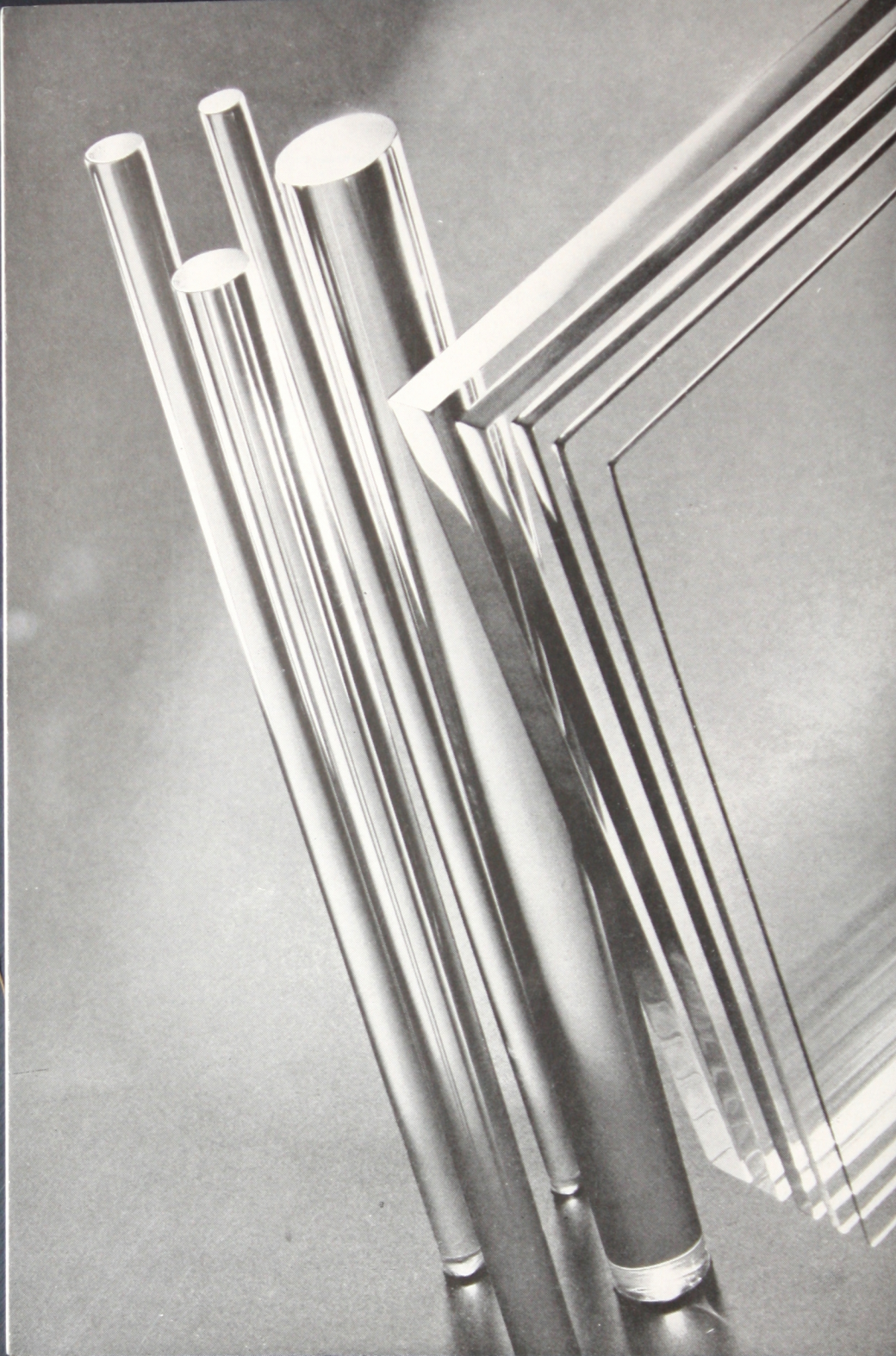
RHOPLEX
Textile Finishes

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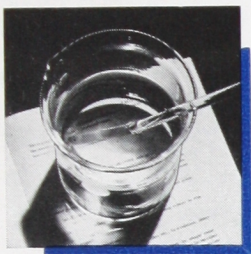
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PLEXIGLAS

ACRYLIC PLASTIC



Among synthetic resins, the acrylics are outstanding in colorless transparency, chemical resistance, and stability against weathering and aging. Behind them lie over forty years of active research by the Rohm &

Haas Company, dating from the original work in the field by the late Dr. Otto Rohm.

These resins are derived by complicated chemical synthesis from such crude raw materials as coal, petroleum, air, and water. They range in consistency from soft, tacky semi-liquids to hard, tough thermoplastic solids; variations can be produced by controlling manufacturing conditions. No fillers are added to the acrylic plastics. Their crystal clarity demands absolute purity of raw materials and strict cleanliness of equipment. They are, therefore, manufactured in new air-conditioned factories.

The acrylics are available in many forms and, because of their unusual combination of properties, find uses in many fields. In the form of aqueous emulsions, they are used as flexible, permanent finishes for textiles and leather; as solutions in organic solvents, they

are used as chemical resistant coatings, adhesives and as the laminating layer for safety glass. Special modifications of these resins are also available for denture plates and prosthetic devices.

Plexiglas, one of the hardest acrylic resins, is a colorless, transparent, thermoplastic solid. It is supplied in cast sheets of a number of thicknesses and sizes and molding powders for compression and injection molding and extrusion. In all of these forms, Plexiglas is available in a number of colors, both transparent and translucent, ranging from delicate tints to deep shades.

Plexiglas moldings or fabricated parts are lighter in weight than ordinary glass but are flexible and practically unbreakable.

Since Plexiglas is a thermoplastic, sheets of the material can easily be formed when heated to the moderate temperatures attained in an ordinary oven. Plexiglas can be sawed, machined and drilled with wood- or metal-working tools.

Plexiglas powders can economically be molded, by the application of heat and pressure, into almost any desired shape. In designing the mold, provision can be made for molding into the piece various trademarks, lettering, and other markings, as well as mounting threads, lugs, and flanges which simplify assembly and installation.

Thus, Plexiglas combines the transparency of silicate glass with the strength and versatility of a synthetic plastic.

CLEAR AS CRYSTAL

More transparent than optical glass, Plexiglas transmits every color of the spectrum fully and

faithfully. Its light transmission value of 92% — as high as the finest optical glass — is due to the perfection of its surface as well as to the inherent clarity of the material. Its transparency is so nearly perfect that the material is difficult to photograph and is often almost invisible.

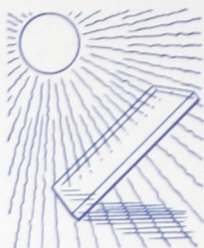
Because of this crystal-clarity, Plexiglas, illuminated from one polished edge, will conduct light to the other edge very efficiently. By repeated reflections between the polished surfaces, possible only in so transparent a material, light is “piped” through Plexiglas curved to radii as small as three times the thickness of the material or bent through angles as sharp as 48°. For this reason Plexiglas is used in medical instruments which conduct light — but not the heat of the light — directly to the field of an operation. Since light “escapes” wherever the surface is broken by sanding, machining, or carving, parts of these instruments are sanded to deliver the light where it is needed.

The clarity of Plexiglas gives liquid, three-dimensional depth to carved designs. Cut and polished or molded Plexiglas surfaces sparkle and glitter like jewels but are warm to the touch.



Plexiglas necklaces, bracelets, chessmen, and other carved novelties rival cut crystal in beauty.

Plexiglas is not only exceptionally transparent to all wave lengths of visible light, but to ultra-violet rays as well. While ordinary glass filters out almost all of this beneficial radiation, Plexiglas transmits ultra-violet rays



down to 300 millimicrons with 90% efficiency. Plexiglas also transmits infra-red and X-rays. Since flat sheets of the material are practically free of internal strains, Plexiglas does not interfere with the passage of polarized light.

Because of this freedom from internal strains and from surface irregularities, Plexiglas does not distort an image viewed through it. It is therefore used in the construction of intricate models or drawing instruments, windshields and windows.

Plexiglas can be ground, molded, or machined to unbreakable enlarging or reducing lenses. Because its index of refraction is only slightly less than that of glass, these Plexiglas lenses are approximately the same size and shape as glass lenses. Contact lenses and experimental spectacles made of Plexiglas have proved light and accurate, as well as shatterproof and practically unbreakable.



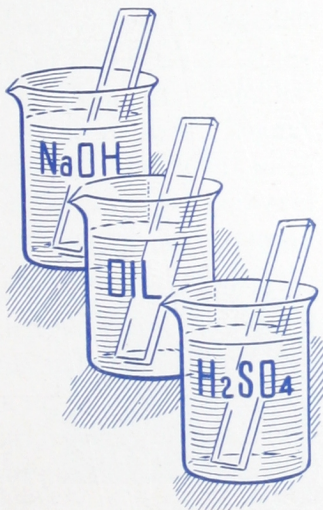
Plexiglas will neither craze nor lose its colorless transparency. Exposure to sunlight and weathering for a period equivalent to two normal years lowers its light transmission only 1%. The permanence of this clarity has also been proved by more than nine years of actual service in all types of aircraft under all kinds of weather conditions.

INERT TO CHEMICALS

Because of the resistance of Plexiglas to the action of most chemical reagents, it is used for

oil line sights, inspection windows in soap machinery, and in many other industrial applications. Plexiglas is unaffected by water, salt and photographic solutions, battery acids, mineral and animal oils, and low concentrations of alcohol. Alkalies and oxidizing acids attack the material only in high concentrations; it is unaffected by paraffinic and olefinic hydrocarbons, amines, alkyl monohalides, and esters containing more than ten carbon atoms.

Lacquer thinners, however, have a solvent action which affects the material as do the lower esters, aromatic hydrocarbons, phenols, aryl halides, aliphatic acids, and alkyl polyhalides such as chloroform and ethylene dichloride. Some of these compounds are the solvents in the acrylic resin solutions widely used as coatings and adhesives.

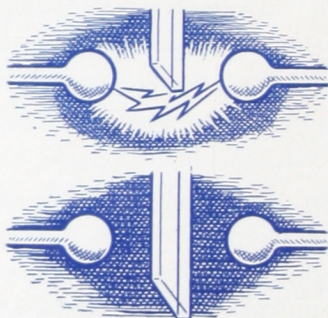


ELECTRICAL INSULATOR

Plexiglas may safely be used in electrical applications — in displays, lamps, and lighting fixtures—because it is an excellent insulator. This insulating property, as indicated by its high dielectric strength, is not affected by soaking the Plexiglas in water or by weathering and aging. Furthermore, because Plexiglas repels water, no water film over which a current could travel forms on its surface.

The high arc resistance of Plexiglas is also practically unaffected by successive arcings. In other words, even when a spark is driven over Plexiglas under high voltage, it leaves no carbon “track” over which a second spark could travel at lower voltages. In most voltage ranges, Plexiglas can be used as an arc quencher; that is, it may be inserted between the electrodes to interrupt arcing.

Plexiglas can be ignited by sustained arcs but not by incandescent or red hot metals. It can also be ignited by direct contact with an open flame but under no circumstances does it flare up suddenly. It burns only as slowly as soft wood.



**STURDY AND
VERSATILE**

Plexiglas can be struck a hard blow without breaking. Thin sheets are flexible and even

the thicker sheets possess a resilience which enables them to withstand blows which would easily shatter glass. Plexiglas is not literally unbreakable, for when held rigidly and struck violently it will break, but into large dull-edged pieces. It is therefore used in public buildings and displays for safety's sake.

Despite its fragile appearance, Plexiglas will support a heavy weight. Designers of furniture find that this crystal-clear plastic is as strong as spruce and that its strength is not materially affected by low temperatures, weathering, or continued flexing. The strength of Plexiglas is high in relation to its weight, for it is less than half as heavy as glass. Lightweight Plexiglas sections, for example, are able to withstand the tremendous air pressures encountered in modern planes.

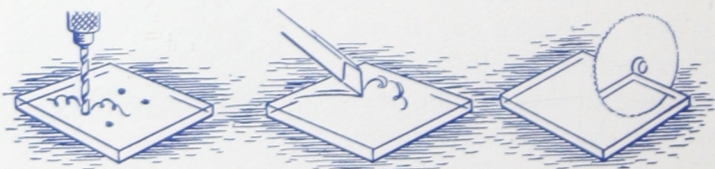
When heated to 220° - 300° F — somewhat hotter than the temperature of boiling water — sheets of Plexiglas soften and can then be bent to almost any shape. Since no chemical change is involved in shaping, the process can be repeated several

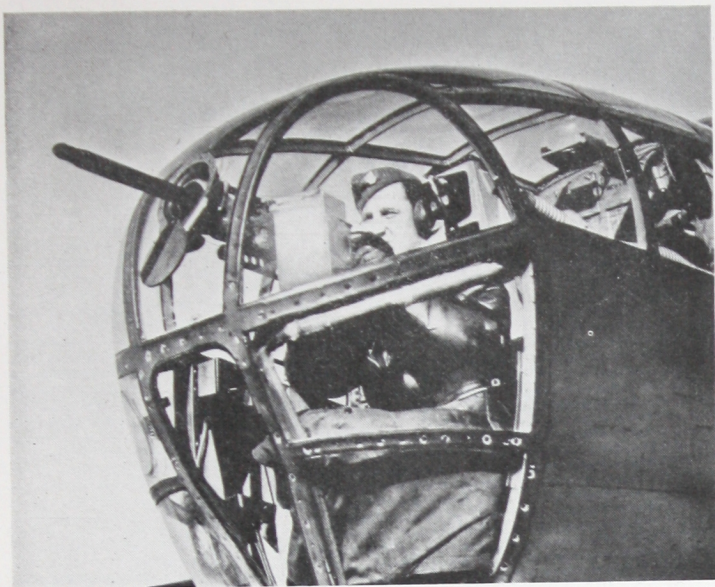


times without affecting the properties of the material. Because of this thermoplastic property, Plexiglas can easily be formed into curved windows and into other shapes for which the forming of glass might be prohibitively expensive. This property also makes possible the simplification of fabricating techniques since a Plexiglas sheet can quickly be bent in one operation to shapes which would require several operations in wood or metal. Despite its similarity to glass in appearance, Plexiglas may be sawed or carved like wood and machined, drilled, and threaded like any soft metal. Designs, figures, and letters are reproduced on Plexiglas by stamping, painting, engraving, or routing. Plexiglas can be cemented to Plexiglas or to other materials with transparent joints.

Plexiglas is hard for a transparent plastic, but still its surface is only as hard as copper. It is therefore rather easily scratched, but these scratches are correspondingly easy to remove by buffing and waxing. This softness of the surface, however, may make the use of Plexiglas inadvisable in certain applications such as table or counter tops.

Large Plexiglas parts are best installed in rubber- or felt-packed channels or mounted with nuts and bolts. Its coefficient of expansion is ten times that of glass and adequate provision should be made for this expansion to assure long satisfactory service.





Plexiglas Nose Enclosure, North American B-25

AIRCRAFT APPLICATIONS



■ The light weight, high impact strength, and permanent colorless transparency of Plexiglas have been dramatically proved in the aircraft industry. Soon after cast sheets were made commercially available by the Rohm & Haas Company late in 1935, government and private agencies subjected Plexiglas to intensive tests and proved its superiority in optical qualities, dimensional stability, permanence and strength. Plexiglas sections are now standard equipment in all types of military and transport planes, and lighter-than-air craft.

Besides offering excellent resistance to weathering, Plexiglas also makes possible transparent sections accurately curved to conform to the contours of the plane. Nose sections, cockpit enclosures, gun turrets and landing light covers as well as such critical optical parts as navigators' astrodomes and gunners' sighting panels are made of Plexiglas. The availability of Plexiglas in sheets greater in area than those of any other transparent plastic also helps the designer to extend the pilot's range of vision.

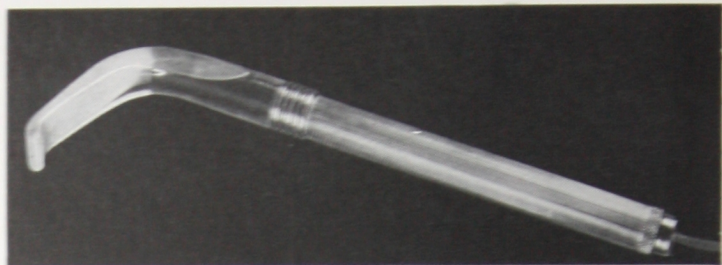
A further development has been the use of Plexiglas as housings for radio and range finder antennae. Mounted in a Plexiglas nose section, for example, the loops offer no wind resistance, yet are some distance from the nearest metal part. Far from reducing reception efficiency, the Plexiglas housing is reported to have cut down static and other interference and is resisting hail, sleet, and other service conditions as well or better than the metal it replaced.



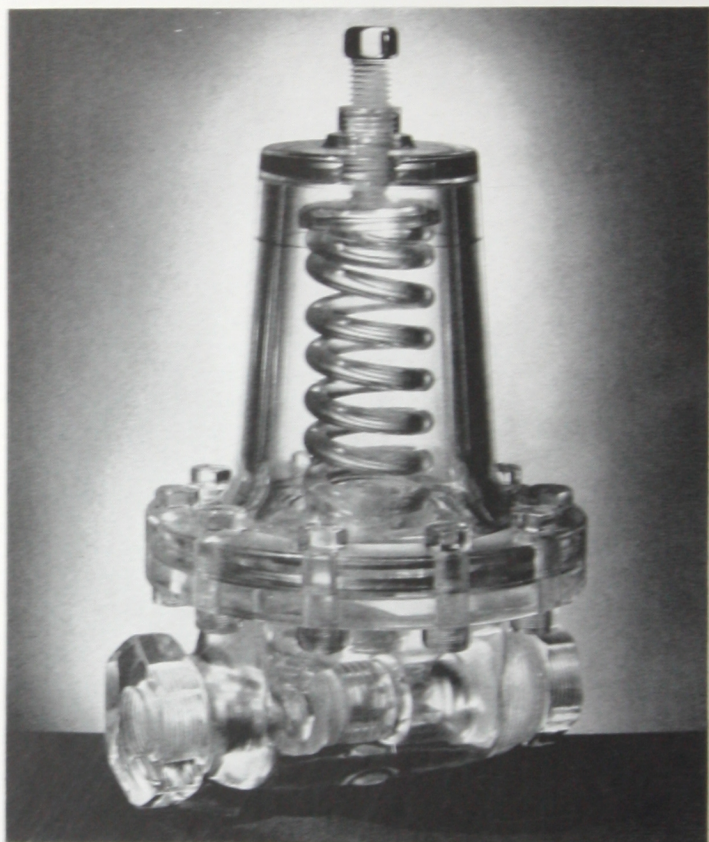
Plexiglas Cockpit Canopy, Lockheed P-38



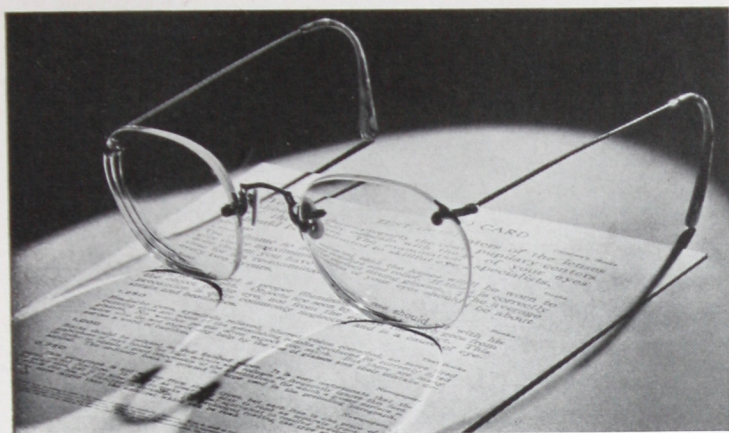
Plexiglas Bombardier Enclosure, Douglas B-18A



Pleriglas pipex light from handle of Curtille instrument



Demonstration and study model of A. W. Cash valve



Light and durable Plexiglas lenses by Unbreakable Lens Company

SCIENTIFIC APPLICATIONS



The property of light conduction, almost unique with Plexiglas, is used in medical instruments which pipe cold light from a small bulb in the handle to the tip of a curved and sanded Plexiglas part. Since Plexiglas also transmits X-rays, doctors form flat sheets into accurately fitting splints which do not have to be removed before making an X-ray plate of a knitting bone fracture.

Optometrists are making contact lenses by forming Plexiglas to fit the patient's eyeball and then grinding the corneal section of the lens to the proper corrective curvature. Light, durable, and accurate, these Plexiglas lenses are worn, without toxic effect to the delicate eye

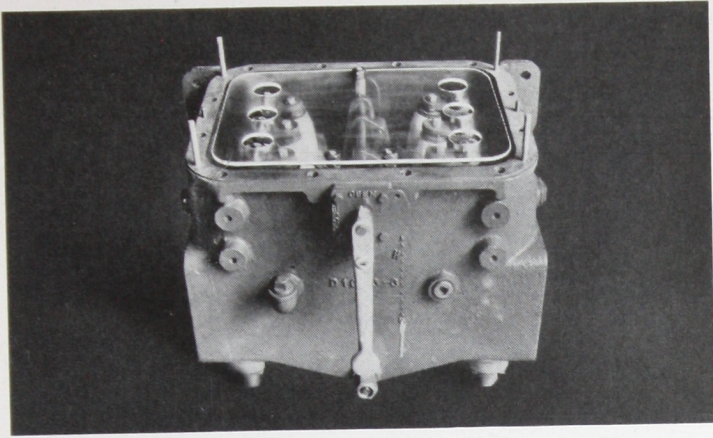
tissue, by aviators, sailors, actors, sportsmen, and others who wish to avoid wearing glasses.

Engineers make strain free Plexiglas models of structural parts and subject them to various loads so that the resulting strain pattern can be studied under polarized light. Draughtsmen find that Plexiglas inkproof drawing instruments permit an unobstructed view of their work, do not discolor on aging, and are not dangerously inflammable.

In the realm of pure science, the unusual optical properties of Plexiglas have also commanded attention. Its high transmission of ultra-violet and infra-red radiation makes possible the use of Plexiglas lenses and prisms in instruments used in these as well as in the visible ranges of the spectrum.



Plexiglas contact lens molded and ground by Obrig Laboratories



G & W Electric Company's subway switch with Plexiglas cover

INDUSTRIAL APPLICATIONS

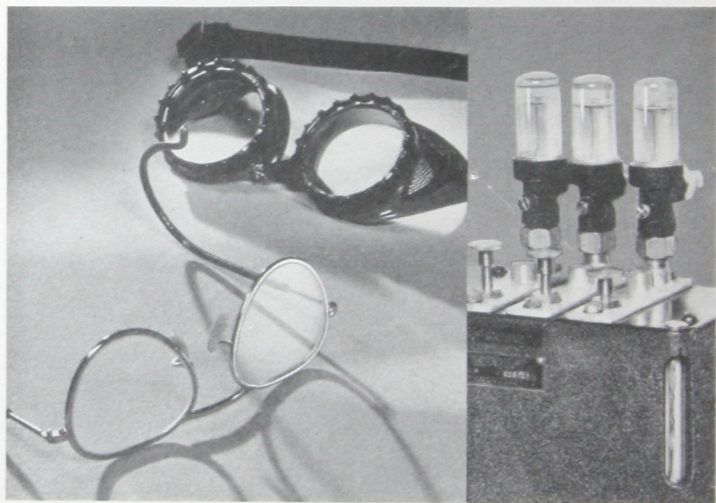


Industry finds the high impact strength of Plexiglas valuable in a number of safety applications where the fragility of silicate glass is a disadvantage.

Machine inspection windows, especially when curved, can economically be made of Plexiglas and mounted securely with nuts and bolts simply by drilling holes through the material. Plexiglas is also replacing ordinary glass for many gauges and dial covers where high pressures are encountered or where silicate glass breakage would be hazardous. Dial markings can be engraved, hot-stamped or molded into the Plexiglas surface to simplify assembly. Acrylic resin cements can be used to make the mountings waterproof.

Plexiglas eye shields and machine guards are often safer than devices made from wood or metal, because the transparency of the plastic allows the operator actually to watch the moving parts. Safety goggle manufacturers find a wide market for Plexiglas lenses, especially for arc welders, because hot sparks bounce from its resilient surface rather than leave pit marks as they do with silicate glass.

Besides reducing the industrial hazards of ordinary glass, Plexiglas is finding its own fields of usefulness. Its freedom from internal strains makes Plexiglas valuable in Polaroid inspection units which depend upon the passage of polarized light. Plexiglas switch covers, besides being strong and durable, permit operators to check a circuit visually. The light conducting properties of Plexiglas are used in devices for inspecting the inside of drums and barrels.



Willson's safety goggles and McCord Lubricator oil sights both use Plexiglas



Sparkling Plexiglas tableware is light and easy to clean

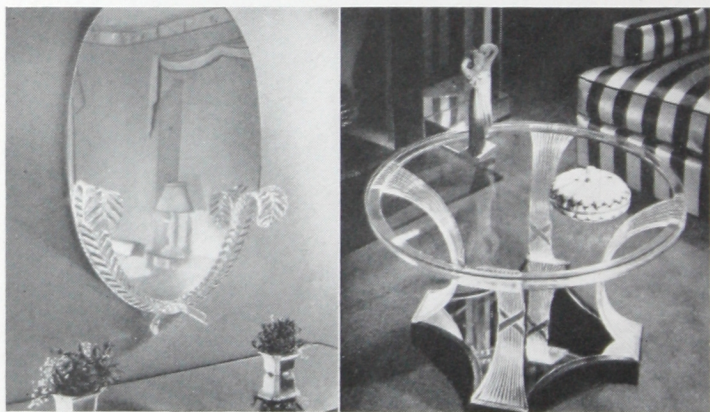
HOME AND BUILDING APPLICATIONS



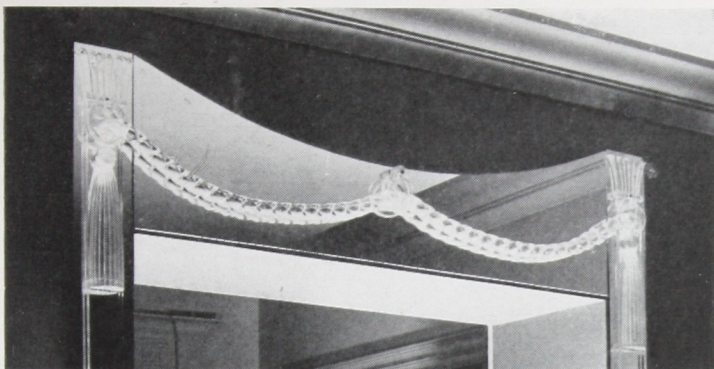
■ The cool clarity of Plexiglas has been used for several years in the fabrication of tableware, salad bowls, hors d'oeuvres trays, coasters, place mats, and table fountains, and has lent a light touch to summer table settings. In addition, it has found a number of decorative applications throughout the home in crystal-clear candlesticks, book ends, picture frames, clocks and hand-carved figurines and statuettes. The jewel-like depth of Plexiglas in color enhances the beauty of many of these pieces, and combinations of Plexiglas with wood, metals, and other materials are especially effective.

Whole rooms of sturdy furniture have been made of Plexiglas because of its beauty, strength and proved resistance to breakage, staining, and chipping. This furniture, including beds, chairs, benches, and tables, has followed both modern and traditional trends and has been made by carving, mortising and doweling the Plexiglas like wood, or by simpler fabrication techniques which depend on the ease of bending sheets, bars, and rods of Plexiglas. Other furniture manufacturers have not overlooked Plexiglas for sparkling drawer pulls, shelves, and trim.

Architectural applications include door lintels, room moldings, and carved edge-lighted screens which have been used as decorative and sturdy partitions. Railings made of curved sheets which may also include edge-lighted designs have been used for stairways and exhibits. Ornamental and functional applications for Plexiglas in the home have by no means been exhausted and its clarity and durability are finding new uses almost every day.



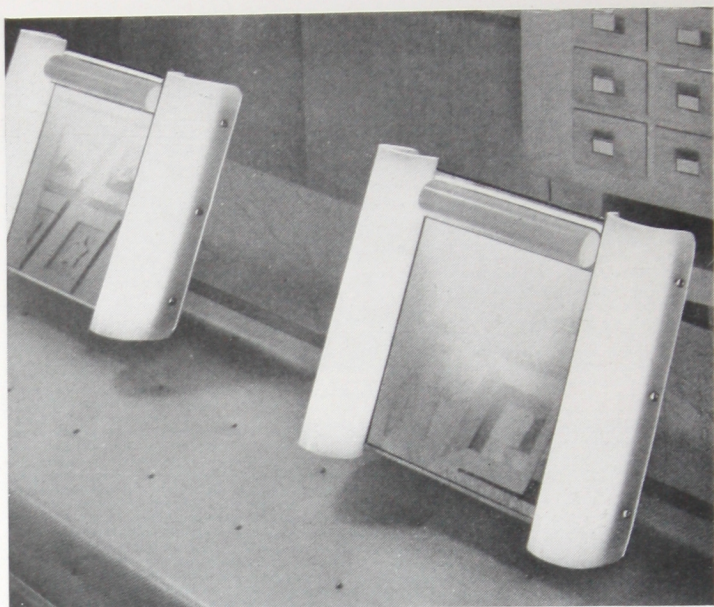
Mirror frame and coffee table designed by Grosfeld House



Carved Plexiglas used for door lintels by Grosfeld House



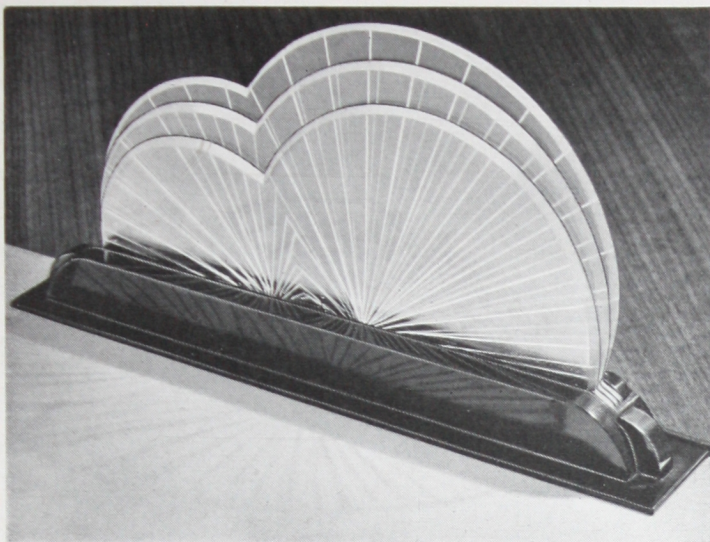
Plexiglas stair rail in W. & J. Sloane's House of Years



Translucent Plexiglas used in make-up lamps designed by Morris Sanders



Carved and formed Plexiglas adds sparkle to Van Cleff lamps



C. K. Castaing's Plexiglas night lamp uses "piped" light

LIGHTING APPLICATIONS

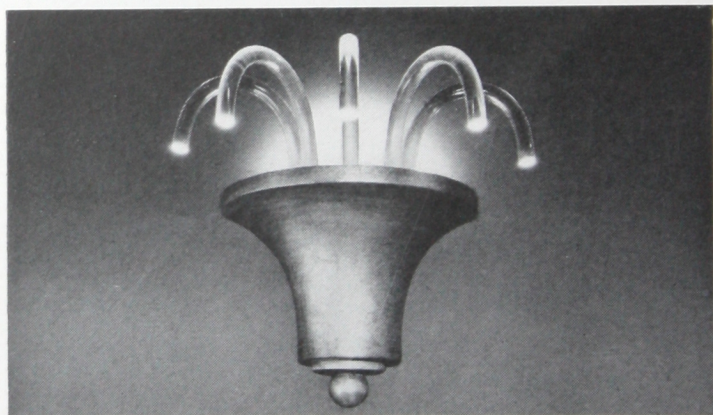


■ Lamp designers find many applications for Plexiglas. As decorative trim, for example, it catches and reflects light in interesting patterns. Its excellent machining properties make possible its use in turned lamp bases; and carved sheets, bent to leaf shapes, are used to brighten bases made of other materials. Here again colored Plexiglas offers interesting variations on the crystal-clear forms.

The unusual optical properties of Plexiglas permit the designer to break from the traditional forms of direct and indirect lighting fixtures. He can conceal wiring and

hardware, allowing the Plexiglas to conduct light around graceful curves or through unusual shapes before delivering it at sanded surfaces. Of course, this "piped" lighting is not especially practical for reading lamps and similar fixtures for close work since even expensive reflectors cannot direct the full illumination from a light source into the edge of a Plexiglas sheet. For night lamps and hall lights, however, these fixtures are decorative as well as effective.

Lighting engineers have also been interested in white translucent Plexiglas for luminaires and other lighting fixtures. This material evenly and effectively diffuses light but absorbs less than 5% of it. White translucent Plexiglas is sold in five different opacities, with varying light transmission and reflection factors, but all at least 95% efficient. For trains, buses, airplanes and other applications where lighter weight, reduced breakage hazard, and greater efficiency are important, white translucent Plexiglas offers obvious advantages.



Plexiglas rods used in Grosfeld House wallfixture



Light, weatherproof Plexiglas windshield in Fokker's Q. E. D.

MARINE APPLICATIONS



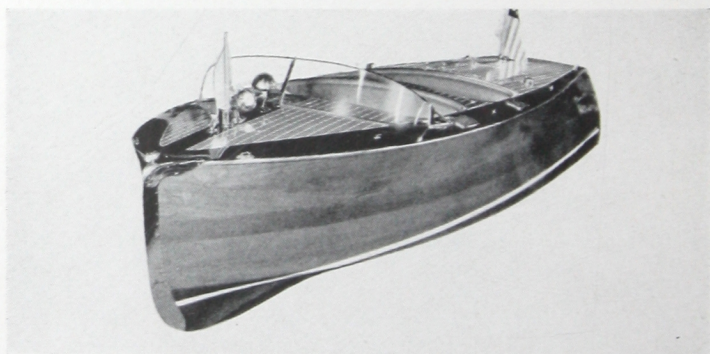
Streamlining of superstructure has only recently come to the pleasure boat field but its advance is being aided by the availability of a really weatherproof, transparent plastic which can be shaped to three-dimensional curved windshields and sprayshields. The weaving and stresses of the superstructure caused by heavy seas will neither break nor crack the Plexiglas sections.

Navy PT boats and many other small service craft which operate in rough waters use Plexiglas for cabin windows, spray shields and gun turrets. Since Plexiglas is less than half as heavy as glass, its use makes possible important weight reductions above the center of gravity.

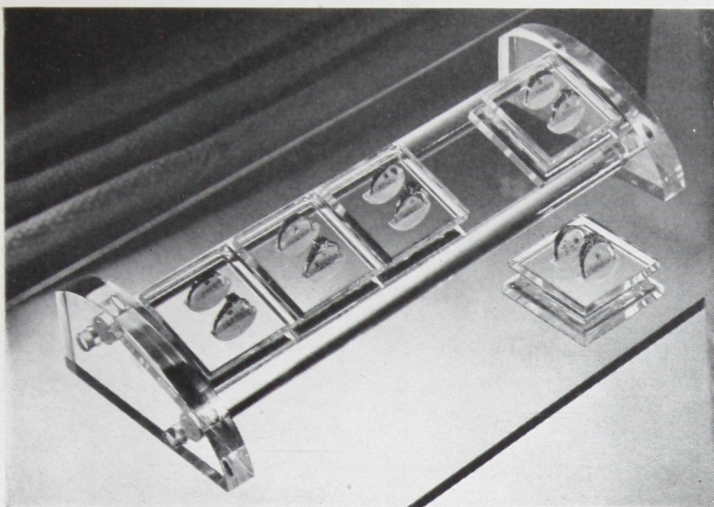
Further savings in weight can be effected by using simple, lightweight mountings similar to those developed by the aircraft industry. An extruded aluminum channel, for example, packed with a rubber compound, is a secure and waterproof support for Plexiglas and reduces interference with vision.

In the field of marine hardware, Plexiglas can replace glass for portlight lenses and running light covers because of its durability and strength. Other sea-going uses include cabin ornaments, lighting fixtures, and compass cases.

Thick Plexiglas is used in skylights and hatch covers which require no protective grille work, but are safely set flush with the deck. In similar applications demanding sturdy, transparent sections unaffected by salt water, sun, and weather, Plexiglas can be used to advantage.



Century runabout equipped with Plexiglas sprayshield



B. F. Brogan displays rings in Plexiglas stand

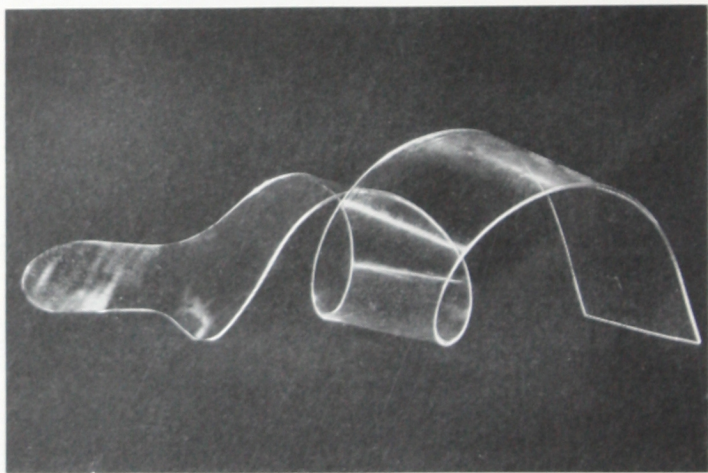
DISPLAY APPLICATIONS



The properties of Plexiglas offer obvious advantages in the display field. Window and counter fixtures, for example, made of this material make every aspect of the merchandise visible, and since the fixtures are practically invisible, do not detract from the product. These fixtures do not follow conventional designs but are shaped to graceful curves or bent to appealing angles at no additional fabricating cost. The availability of Plexiglas rods in a number of diameters also increases the number of possible forms, so the progressive store owner may choose from a variety of strong, lightweight fixtures.

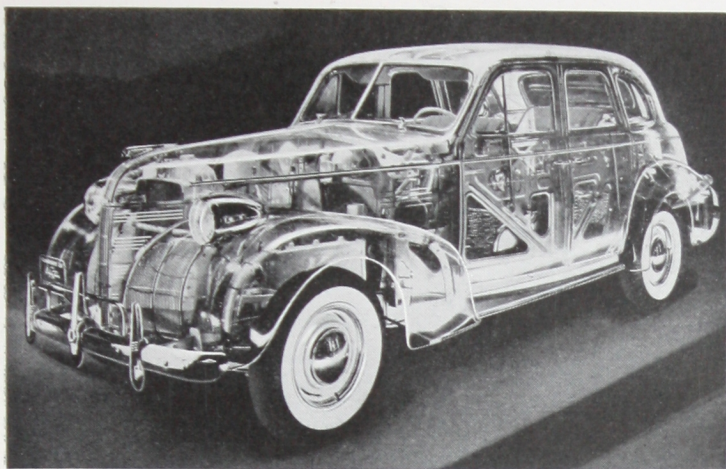
Plexiglas is also excellently suited to the construction of models. Automobiles, for example, with Plexiglas bodies have shown spectators at the New York and San Francisco World's Fairs the features of Fisher Body construction. The engineering details of valve structures and other complicated mechanisms are easy to demonstrate when machined from a plastic as clear as optical glass. Manufacturers have also found these models useful for technical study and tests.

Display designers use the light piping properties of Plexiglas in highlighting sales messages on counter displays or for illuminating one part of an exhibit from a hidden light source. Transparent shelves, edge-lighted trade-marks, and other eye-catching devices executed in Plexiglas have paid dividends in increased popularity for many trade show exhibits.



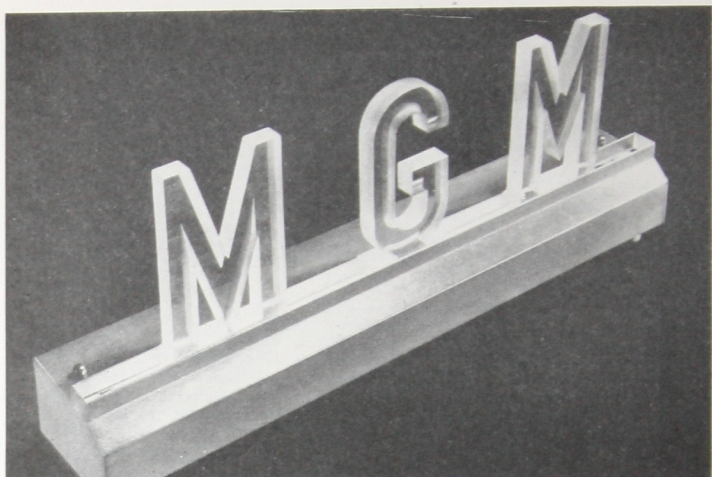
Hosiery display made by Cyrille Steiner for Jas. B. Williams

Right, Frederick Weinberg's Plexiglas display hand



Pleziglas Pontiac shows Fisher Body construction

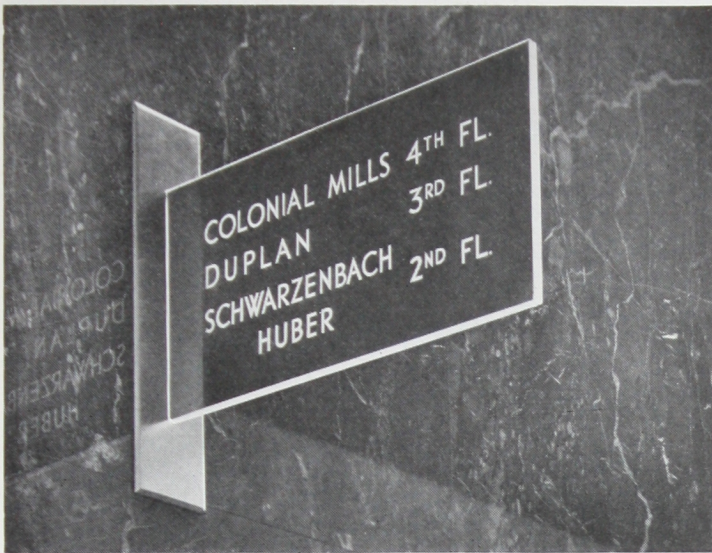




Removable Plexiglas letters for Colovision sign



Outdoor three-dimensional sign, General Motors



Edge-lighted Plexiglas sign by North American Sign Company

SIGN APPLICATIONS



■ To the sign manufacturer, whose principal asset is the ability to produce novel effects, Plexiglas offers unlimited possibilities. For example, its crystal clarity makes possible edge-lighted signs, lighted from a source several feet away or even around a corner from the sales message. Lettering and designs may be engraved, sand-blasted, or stamped on the surface of the sheets and illuminated from lights hidden beneath a desk or counter top. These sturdy signs may be mounted with nuts and bolts and bent to the most effective angle simply by heating and forming.

In the production of three-dimensional signs, the crystal clarity of Plexiglas sheets is again used to advantage. Thick sheets are cut in strips, bent to form the letters or figures, and mounted on edge in metal troughs which also house fluorescent tubing. The ease of forming Plexiglas, the simplicity of mounting, and optical efficiency of Plexiglas make these signs profitable for the manufacturer as well as effective for his customer.

Still a different effect may be obtained by jigsawing letters out of a flat sheet and mounting the sheet on edge in a light trough. The sawed edges catch the light and outline each letter. Other modifications, including removable individual letters or white translucent Plexiglas facings for illuminated letters, can also be used in signs ranging from small point-of-sales units to theater marquees and spectaculars.



Three-dimensional point-of-sale sign by Colorvision



Novelty horse carved and polished by Shoreham Mfg. Co.

MISCELLANEOUS APPLICATIONS



■ The crystal sparkle and liquid clarity of Plexiglas jewelry has caught milady's eye in many stores. Carved necklaces, bracelets, brooches, rings and pins have proved so popular that manufacturers have also used carved Plexiglas for other accessories like handbag trim and umbrella handles. Transparent Plexiglas shoe heels have sounded a new style note in evening slippers and Plexiglas novelty buttons are appearing on informal dresses. The dresses, incidentally, may be hung on clear Plexiglas hangers while Plexiglas brushes and mirrors sparkle on the dresser top.

Watch crystals and even watch cases made of Plexiglas are proving popular. Fountain pens, clear enough to permit a ready check on the ink supply, are also being machined from Plexiglas rod. A Plexiglas fishing reel is the last word in deep-sea tackle and Plexiglas gavels have brought to order political conventions and the meetings of leading chemical, engineering, and plastics societies. Almost everything that can be turned on a lathe, from canes to chessmen, can be made in Plexiglas.

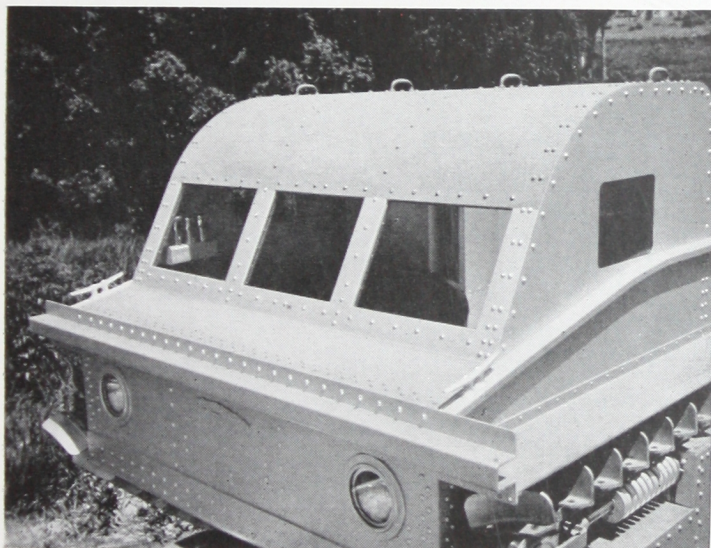
Curved windows in the buses at the New York World's Fair were Plexiglas, and many custom body builders use the material for transparent partitions between front and back seats of automobiles. A better example of its strength is its use as a windshield of a special amphibian tractor designed for service in Florida's mango swamps. In turning aside heavy branches the windows have suffered minor scratches, but have not broken or cracked.



Carved Plexiglas necklace sparkles like crystal



Brush backs and mirror handles by Shoreham Mfg. Co.



Roebling amphibian tractor with Pleriglas windshield



Plexiglas cosmetic containers molded for Saks by Thomas Mason



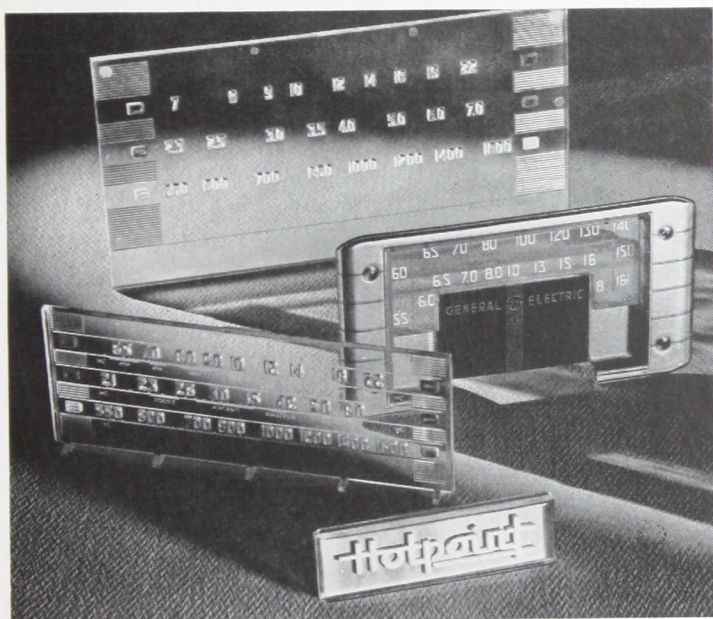
COMPRESSION AND INJECTION MOLDING POWDERS

When a large quantity of identical, crystal-clear parts is required, molding from Plexiglas powders is often a faster and cheaper method of production than forming and fabricating from Plexiglas sheets or rods.

Under the heat and pressure of heavy compression or injection molding presses, particles of Plexiglas powders soften and flow or are forced into the shape of the mold. When cool, the molded part has all the clar-

ity and sparkle of a part fabricated from Plexiglas sheet. The whole operation or cycle is usually a matter of seconds — rarely as long as a minute. As many parts may be produced in one fast cycle as there are cavities in the mold.

Molds for this work are cut from hard steel and carefully polished, lapped or plated so that the part will come from the mold with a high surface finish ready for use. By intelligent mold design, many other economies can be made in finishing and assembly. Holes, lugs, flanges and even screw threads can be molded into the part thereby eliminating many assembly parts and saving installation time. More important, from the appearance standpoint, it is possible to mold into the part not only dial markings, but trademarks and other let-



Nameplate and edge-lighted dials molded by General Electric



Capehart esculcheon, 9"x6", injection molded by Cardinal Corp.

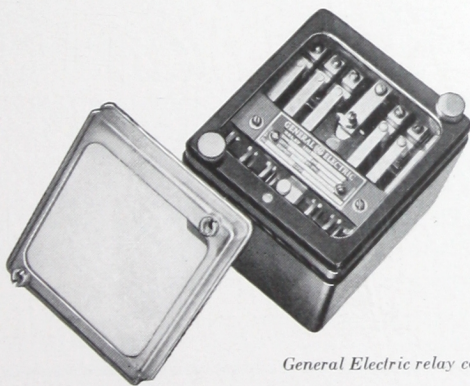


Hair-dryer part, weighing 26 oz., compression molded by G. E.

tering for name plates. If these markings are indented into the surface, it is possible to wipe pigment into them so that they will stand out from a crystal-clear or painted background.

The sparkling clarity of Plexiglas has been used to advantage in edge-lighted radio and automobile dials, in crystal-like ornaments and artificial jewels, in brush-backs, cosmetic containers, nameplates, gauge glasses, and goggle lenses. Its resistance to the action of most chemicals and solvents and its excellent electrical and physical properties have made possible its use in many industries. Like Plexiglas sheet, properly molded Plexiglas does not warp nor lose its colorless transparency even on prolonged exposure to weathering.

Many manufacturers are considering the use of Plexiglas to replace wood or metal in applications where glass could not be used because of its fragility, but where transparency offers definite advantages. Custom molders will cooperate in the execution of these plans and Plexiglas molding powder salesmen are also trained to assist in the technical details of mold design and molding.



General Electric relay cover

TABLE OF PROPERTIES

Since Plexiglas is thermoplastic, its properties will be found to vary with the temperature of the material. The values given apply for 25° C. to 30° C. (77° F. to 86° F.).

OPTICAL PROPERTIES

	<i>Plexiglas Sheet</i>	<i>Molded Plexiglas</i>
Clarity.....Light Transmission —	91-92%	91-92%
Scattering Effect —	Practically nil	Practically nil
Refractive Index n_d	1.488-1.489	1.488-1.489
Dispersion	.008	.008

PHYSICAL PROPERTIES

Specific Gravity	1.18-1.19	1.18-1.19
Hardness Mohs	2-3	2-3
Rockwell	M-70	M-70
Brinell (500 Kg. 10 mm. ball) ..	18-20	18-20
Tensile Strength (lb./sq. in.)	5,800-8,000	4,000-6,000
(Elongation at failure)	2% min.	1-5%
Flexural Strength (lb./sq. in.)	14,000-16,000	10,000-15,000
Compressive Strength (lb./sq. in.) ..	11,000-13,000	10,000-15,000
Impact Resistance (ft. lbs./in.)	6.8-7.2	4-12
(A.S.T.M. Charpy unnotched bar)		
Modulus of Elasticity (lb./sq. in.) ...	$3-5 \times 10^5$	
Coefficient of expansion.....	$8 \times 10^{-5}/^{\circ}\text{C.}$	$8-9 \times 10^{-5}/^{\circ}\text{C.}$
Water absorption by Weight (not preconditioned)		
24 hrs.....	0.6% min.	0.4%
48 hrs.....		0.5%

ELECTRICAL PROPERTIES

	<i>Plexiglas Sheet</i>	<i>Molded Plexiglas</i>
Dielectric Constant		
(60 cycles)	3.4-3.6	3.4-3.6
(1,000 cycles)	3.2-3.4	3.3-3.5
(1,000,000 cycles)	3.0-3.2	3.1-3.3
Power Factor (at 60 cycles)	5-6%	5-6%
Dielectric Strength		
(short time test) (volts/mil)	500	500
(one minute stepwise) (volts/mil) .	400	400
Volume Resistance (ohms/cm ²)	over 10 ¹⁵	over 10 ¹⁵

CHEMICAL PROPERTIES

(A.S.T.M. Tentative Method D543-41T)

Pieces of Plexiglas 1" x 3" x .125" were totally immersed in the following chemical solutions for 192 hrs. at 25° C. and the absorption measured.

<i>Immersion Solution*</i>	<i>Percent Weight Gain</i>	
	<i>Plexiglas Sheet</i>	<i>Molded Plexiglas</i>
30% Sulfuric Acid	0.1	0.6
3% Sulfuric Acid	0.5	1.0
10% Hydrochloric Acid	0.5	0.7
10% Sodium Hydroxide	0.4	0.8
1% Sodium Hydroxide	0.5	1.0
10% Nitric Acid	0.9	0.9
5% Acetic Acid	0.8	1.0
100% Oleic Acid	0.0	0.0
2% Sodium Carbonate	0.8	1.0
10% Sodium Chloride	0.8	0.9
10% Ammonium Hydroxide	0.7	0.9
3% Hydrogen Peroxide	0.8	1.0
100% Distilled Water	0.9	0.9
Gasoline	0.2	0.2
95% Ethyl Alcohol	24 (Softened and made flexible)	Dissolved
50% Ethyl Alcohol	6 (Softened and made flexible)	Dissolved
Acetone	Dissolved	Dissolved
Ethyl Acetate	Dissolved	Dissolved
Ethylene Dichloride	Dissolved	Dissolved
Carbon Tetrachloride	Dissolved	Dissolved
Toluene	Dissolved	Dissolved

*All concentrations given in % by weight in distilled water.

A gain in weight of 1% or less is considered negligible except in unusual applications.

FURTHER INFORMATION.....

*... on PLEXIGLAS may be obtained from our
nearest technical representatives:*

NEW YORK 18, NEW YORK

11 West 42nd Street
Longacre 3-2390

CHICAGO 4, ILLINOIS

25 East Jackson Boulevard
Wabash 3076

LOS ANGELES, CALIFORNIA

4521 Firestone Boulevard
South Gate

DETROIT 2, MICHIGAN

619 Fisher Building
Madison 1500

DALLAS, TEXAS

C. D. Myers
529½ South Ervay Street
Central 7385

ST. LOUIS 9, MISSOURI

J. W. Richardson
6231 Eichelberger Street

CLEVELAND (LAKEWOOD 7), OHIO

F. L. Fine
12227 Clifton Boulevard
Lakewood 8322

CANADIAN DISTRIBUTOR

Hobbs Glass, Ltd.—Plastics Div.
70 York Street
London, Ontario

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

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2-41 5000
9-42 5000
6-43 2500
11-43 5000
7-44 5000
2-45 5000
10-45 10000
5-46 10000

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